

fully with Doctor Pottenger concerning repetitions of bacillary inoculations in tuberculosis and that we only accomplish a relative immunity. Regarding the primary infection, we have learned that it does not always start in the apex as formerly believed; it starts most often infraclavicularly, and an early lesion may thus be overlooked by the ordinary physical examination.

Doctor Pottenger's grouping of symptoms is excellent; you will notice the most distressing ones are due to toxemia, which can only be combated by rest in bed. How necessary, therefore, to make an early diagnosis and get our patients at rest!

Time will not permit lengthy discussion of the statement that the allergic reaction is the main etiological factor in pulmonary tuberculosis. We are beginning to recognize this fact in other diseases, and particularly in other pulmonary conditions; perhaps it explains why we have so often failed to effect a cure in one patient while accomplishing it in another. It is certainly a true and important statement, if reactions in the human body can cause mild symptoms in one person, and severe ones in another, it surely becomes self-evident that a careful eliciting of all facts which can have a bearing upon an early diagnosis is a matter of the first importance.

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A. L. BRAMKAMP, M.D. (Banning).—For many years, in season and out of season, Doctor Pottenger has been preaching to medical men this gospel of the curability of pulmonary tuberculosis based on early diagnosis and treatment.

On the whole it may be accepted as a fact that doctors generally are now somewhat better able to recognize the clinical disease from physical signs than formerly if serious and persistent effort is made. However, in many cases, the disease will have done considerable damage in the lungs by the time physical signs are readily detectable. We need to be "tuberculosis minded," always alert to the possibility of its existence even in the apparently well or slightly indisposed.

While it is true that other diseases are accompanied by many of the symptoms of pulmonary tuberculosis of the toxemia group, if the toxemic symptoms in a particular case are accompanied also by those of the reflex and focal groups the evidence is so compelling that we should consider the case one of tuberculosis until some other fully adequate explanation is found.

Just as in years past, moderately or far-advanced cases form the great majority of patients in sanatoria. Many of these patients have had relatively early diagnosis and therefore are perhaps themselves responsible for their failure to recover. Since the change to the present hopeful attitude as to the curability of the disease, there is lessened stigma attached to those who have it. And particularly, since the patient's own efforts and coöperation are such large factors in determining the outcome, can there be any justification for failure to inform the patient early and fully as to the diagnosis.

It is well to keep in mind that pulmonary tuberculosis in children and adolescents is more common than formerly realized; that in these young people (as in some adults) physical signs of the disease may be very indefinite or altogether lacking. In these patients the clinical history may have to be relied upon almost wholly. Fortunately in these cases the x-ray often affords definitely corroborative evidence.

Doctor Pottenger's emphasis on the value of an adequate history as a factor in the early diagnosis of pulmonary tuberculosis, even before substantiating physical signs are present, is as important and as timely as ever.

## THE TEACHING OF PERINEAL PROSTATECTOMY\*

By FRANK HINMAN, M.D.

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DISCUSSION by Ralph Williams, M.D., Los Angeles; R. L. Rigdon, M.D., San Francisco; Robert V. Day, M.D., Los Angeles.

THE operation of "conservative perineal prostatectomy" holds a rather unique position in the field of surgery. It has passed through several short periods of popularity alternating with those of marked disfavor. Few surgeons today perform prostatectomy by way of the perineum and it is a matter of some curiosity to the many who do not, why this small group persists in performing perineal prostatectomy. There are two factors that contribute to the disfavor of this operation. One of these is the so-called "median perineal prostatectomy" with which it has often been confused. At the outset it must be recognized that Young's conservative perineal prostatectomy is the only safe perineal operation for removing enlargements of the prostate and when properly performed is a highly technical surgical procedure, whereas median perineal prostatectomy is a blind, unsurgical method, unworthy of comparison. The results are in no sense comparable. Another factor that has contributed largely to the disfavor of conservative perineal prostatectomy is the fact of its having been attempted in the past by men unprepared to perform it. It must be recognized that the operation can be performed successfully in one way and one way only, so far as fundamentals are concerned, and this one way was first outlined by Young. Modifications that have since appeared are of relatively minor importance. The Young method preserves the rectum and the external sphincter and the ability properly to do this is the stumbling-block of the operation.

### THEORETICAL ADVANTAGES OF PERINEAL PROSTATECTOMY

The theoretical advantages of perineal prostatectomy over suprapubic prostatectomy are numerous. Regional anesthesia is much more satisfactory by way of the perineum. Complications and dangers of infection are much less, the perineum having apparently a localized immunity which the suprapubic route lacks. Furthermore, the suprapubic incision, because of the proximity and danger of injury of the peritoneum and because of the complications that arise from infections of the space of Retzius or the perivesical regions, produces marked postoperative burdens that the perineal route escapes. Keyes, recognizing this danger from infection, has advocated suprapubic prevesical section, the bladder not to be opened until after it has become adherent to the edges of the suprapubic wound so as to prevent spread of infection. But the suprapubic route rivals perineal surgery only when the open,

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visual operation of Thompson-Walker or Hunt is performed and neither of these can be done by a two-stage method. The perineal route offers better control of hemorrhage because of its being a more open, visual operation and of the more direct access for packing when required. Dependent urinary drainage is also obtained, although Fullerton has recently advocated placing of perineal drains after suprapubic prostatectomy. Because of less shock and danger of the operation, poorer risks can be subjected to it and there is an easier convalescence. The mortality, as shown by numerous published statistics, is at least 50 per cent less than that following the suprapubic operation. The average would be about 3 per cent for perineal as compared to 6 per cent for suprapubic in the hands of those most experienced by both routes. The very practical disadvantages of the perineal method are the greater difficulty of its performance, the greater possibility of poor urinary control afterward and the danger of producing a rectal fistula. Unless these dangers of incontinence and rectal injury can be prevented, the perineal route, in view of the marked advance in the technique of suprapubic prostatectomy, should be abandoned. But it is safe to say that if all urologists were even fairly certain of not injuring the external sphincter or the rectum, all would elect the perineal route because of the above advantages.

#### CHOICE IN METHOD, AS INDICATED BY LITERATURE

A glance at the medical literature of recent years shows that there has been a marked diminution in the popularity of perineal prostatectomy abroad, but a very distinct growth in popularity in the United States. Judging from the titles in the *Index Medicus* alone, there were only twenty-two foreign, as compared to sixty-six American publications on perineal prostatectomy in the last twelve years; whereas, during the previous twelve years, one hundred and forty-five articles appeared by foreigners, as compared to forty-eight by men in this country. With few exceptions, the urologists in this country who prefer the perineal route are men who have been trained by Young of the first and the second generation, and this alone is a good indication of the superiority of Young's method over other perineal methods. It would seem that ability to perform perineal prostatectomy successfully is not easily obtained. Few men who elect this method have been self-taught. Most of them have first seen it done, then helped to do it, and have finally done it themselves. The success of the operation depends upon the mastery of three anatomical principles: first, exposure of the prostate; second, the complete enucleation of the hyperplasia; and, third, proper repair with hemostasis. These principles have been recently published<sup>1</sup> in detail with illustrations, and will be but briefly referred to here. The most difficult problem of the operation is successful perineal exposure which is solely ana-

tomical and which requires for successful performance the recognition of two anatomical signposts: first, the central point of the perineum; second, the fascia of Denonvillier. Once expert in the proper dissection of these anatomical structures, the other steps of the operation become safe and simple.

It is a matter of some surgical interest to know whether the principles of preserving the rectum and urethral sphincter can be successfully taught, for, if not, it would seem that the operation is bound to fall into disfavor. Recent medical literature rather proves that the first generation has carried on successfully, inasmuch as a number of fairly good-sized series with remarkably low mortalities and especially good functional results have been reported by a number of Young's pupils. As a test of ability, the results of seventy operations performed by fourteen of the second generation at the City and County Hospital, while in training, are presented below, as well as the answers of this group to a questionnaire recently mailed them. Most of these men have been practicing urology for a very short period so that their opinions cannot be taken as final, inasmuch as they have hardly had time to fully test or modify them. A minority, however, have been in practice for a number of years and their opinions, therefore, should be more mature. Each one of these men has had charge of the urological service of the San Francisco City and County Hospital for at least six months after two or more years' apprenticeship as an assistant, and almost without exception the operations analyzed are the first ones of this type ever performed by him. In addition, it must be recognized that no more severe test of surgery than this could be asked in that these cases are without exception free clinic type, which are notably poorer risks than private patients, and which have had the ordinary ward service without any special assistance in the way of care, and in that each man has been more or less individually responsible for preparation, operation and postoperative care. The results are not published out of any great satisfaction in them because, as a matter of fact, they are not good results; but the results are published in order to emphasize the difficulties of learning how properly to perform prostatectomy. In order to check the situation the suprapubic operations performed by the same group have been studied. Should similarly poor results persist into private practice with any or all of these men they will no doubt abandon perineal prostatectomy and undertake suprapubic prostatectomy. They may later return to the perineal route because of greater discouragements suprapubically, as this has already happened with one or two of them. No prostatectomist can expect to cure completely every patient who comes to him for operation. There has been, however, a marked difference in the relative degree of success of these different men, some being remarkably skillful, having no rectal fistulae and no incontinence, while others

<sup>1</sup>Hinman, Frank: Perineal Prostatectomy, Contribution to the section on Clinical Surgery. *Surgery, Gynecology and Obstetrics*, pp. 668-681, November, 1929.

Probably no more rigid test of an operation could be asked than a series of first cases performed without supervision by fourteen different surgeons in training. Seventy consecutive patients have been thus operated upon:

	Cases
Three operated one patient each.....	3
One operated three patients.....	3
Two operated four patients each.....	8
Four operated five patients each.....	20
One operated seven patients.....	7
One operated eight patients.....	8
One operated ten patients.....	10
One operated eleven patients.....	11
<hr/> Fourteen surgeons	<hr/> 70

There were eight deaths in the hospital, a surgical mortality of 11 per cent; four within forty-eight hours of myocarditis or hemorrhage; one each on the fourth, ninth and thirtieth day, of pneumonia and renal insufficiency (a low phthalein before operation in one); and one, who had a rectal fistula in the seventh month after prostatectomy, following operation for repair of the fistula. One patient was operated on for an acute gall bladder thirty-one days after prostatectomy and died three days later.

There were six recto-urethral fistulae, one in a patient who died on the twenty-sixth day of pneumonia, and another in the patient mentioned above who died after a repair operation seven months after prostatectomy, one which was closed immediately and a suprapubic prostatectomy done later. One closed spontaneously within two months, after suprapubic drainage was established by cystotomy; and two were operated on for closure (Young-Stone method) two and one-half and six months later. The last patient still had slight perineal drainage on discharge two months later. All fistulae were closed on discharge.

The appended tables tell briefly the results following operation.

TABLE 1.— <i>Tabulation of Results</i>													
At Time of Discharge from Hospital from Date of Operation													
Control of Urination	Less than weeks						Less than months						Total
	1	2	3	4	6	8	3	4	5	6	7	8	
1. Good	...	...	2	15	6	5	2	...	...	...	...	...	30
2. Fair	...	...	1	2	2	2	...	...	...	...	...	...	7
3. Poor	...	...	...	...	3	1	1	...	...	...	...	...	5
Not stated	...	...	2	4	6	6	...	...	...	1	...	1	20

  

DURATION FROM DATE OF OPERATION													
Died in Hospital	1 2 3 4 5	6 7	⑨	8	1, 2, 3 and 4, hemorrhage and myocarditis. 5, 6 and 8, convulsions and pneumonia. ⑨ following repair of recto-urethral fistula in 7th month. ⑩ following operation for acute gall-bladder.								8
Perineum dry and permanently closed	10	23	12	3	3	...	...	...	...	...	1 1	(by cystotomy) (slight leakage after recto-urethral fistula was closed.)	
Not stated	...	...	...	1	4	3	1	...	...	...	...		

  

Recto-urethral Fistula.	All closed.	1. Closed at once, suprapubic operation later. 2 and 3. Closed at 4th and 8th month by Young-Stone method. 4. Healed spontaneously with retention catheter. 5. Died on 26th day (No. 8 above). 6. In 7th month following repair.
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TABLE 2.—Results in twenty-five consecutive suprapubic cases performed by same group of men whose perineal results are analyzed above.

	Cases
Two operated one patient each.....	2
Two operated two patients each.....	4
Two operated three patients each.....	6
One operated four patients.....	4
One operated nine patients.....	9
Nine surgeons	25

It is rather disconcerting to find that in this small series there is an operative mortality of 29 per cent.

- One patient died in twelve hours.
- One patient died in twenty-four hours.
- One patient died in two days.
- Two patients died in five days.
- One patient died in eleven days.
- One patient died in thirty-five days of bronchopneumonia.
- One patient died in four months, two days after partial cystectomy for tumor of the bladder.

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#### QUESTIONNAIRE AND REPLIES

The questionnaire mailed the above fourteen men is as follows:

- "Have you any preference as between the perineal and suprapubic route for prostatectomy? State briefly your reasons.
- Have you had rectal fistulae? Explain.
- Have you had incontinence? Explain.
- Will you briefly state in general your experience with prostatectomy?"

Replies have been received from only twelve of the fourteen and all but one have stated a distinct preference for the perineal route. Two of those who have been in practice for several years became discouraged with their results perineally and started to perform prostatectomy through the bladder, but after thirty or forty such operations, decided that their results by way of the perineum were better than suprapubically and returned to the perineal route. Unfortunately the questionnaire is so worded that one cannot tell whether the fistulae and incontinence asked about occurred in private practice or whether cases operated at the City and County Hospital are included.

**Rectal Fistula.**—Three men state they have each had rectal fistula once, the explanations being as follows: (1) "Three days after perineal prostatectomy a large milk and molasses enema was given by inexperienced nurse; fistula persisted until patient's death six months later from carcinoma of the stomach." (2) "I have had one rectal fistula, due to faulty preoperative preparation of the patient whereby the patient was put on the table soon after two enemas had been given without any return. The fully distended rectum was perforated by the index finger during the preliminary blunt dissection of the lateral fossae. The prostate was removed later by the suprapubic route." (3) "I have had one case of rectal fistula in a case of carcinoma."

**Incontinence.**—None of these twelve men has ever had a case of incontinence, although most of them speak of a temporary dribble for the first one or two months postoperatively, after which there was perfect control.

**General Personal Experience.**—As to answers to the general personal experiences, one writes: "I have had

between twenty and twenty-five cases. The results have been best where the staff is trained and equipped for perineal work. They are possibly harder to do and care for than suprapubic cases in some hospitals and require a little more personal attention for forty-eight hours, after which they require less expert care than the suprapubic cases. The greatest danger is from hemorrhage and its sequelae (infection). I feel that hemorrhage is often not dealt with radically enough or soon enough. The mortality may probably equal or exceed suprapubic because poorer risks are accepted for perineal operation due to its lack of severe shock and use of local anesthesia." And another writes: "Twelve suprapubic prostatectomies with one death. Forty-four perineal prostatectomies with no deaths. These are all private cases and, while the series is small, with one exception, the results have been very satisfactory. The one exception—the median lobe was not removed in the perineal operation." A third says: "One's general impression of prostatectomy is that the perineal route is the more surgical procedure of the two as regards the operative field. The suprapubic method savors strongly of crudeness—I refer particularly to the actual method of enucleation." A fourth replies: "My short series of cases, all at the San Francisco Hospital, have led me to believe that the perineal route, once mastered, gives the best structural results. I have had six cases. One death two weeks postoperatively from pneumonia. This patient was a bad risk. Had a large diverticulum. The gland was carcinomatous and very markedly adherent to the rectum. Done under spinal and gas-oxygen anesthesia. All other cases gave satisfactory results." A fifth: "My own experience with prostatectomy has thus far been limited to about twelve cases. From this meager experience and what I have gathered from the literature, it appears to me that future developments in prostatic surgery will be consummated with the primary control of hemorrhage by suture and attempts to get primary wound healing." A sixth writes at length: "My limited experience leads me to believe that the advantages of perineal over suprapubic prostatectomy are more theoretical than practical, when we consider the technique of the perineal method in the past. Both methods probably have certain advantages, one over the other, but the comparative ease with which the suprapubic operation can be done favors its more general use. Consequently, I think the perineal operation ought to be abandoned unless evidence can be adduced to show that its results are so vastly superior to the suprapubic as to more than offset the technical difficulties of the perineal. I do not think that statistics show any vast superiority in the results of perineal prostatectomy. In my opinion the future progress of prostatectomy lies in an improvement in our present methods of controlling bleeding at the time of operation. I think that packing of the prostatic cavity, the use of rubber bags, etc., can and should be abandoned. Without their use it is possible to obtain primary closure and healing of wounds without urinary drainage and thereby greatly shorten convalescence and add to the patient's comfort. My experience in some twenty consecutive cases has shown that satisfactory control of bleeding can be obtained in every case without resorting to packs, etc., and in 90 per cent of them primary healing will occur without the wound breaking down and draining. When it does drain it is usually very transient. In this way it is possible to discharge many patients from the hospital in twelve to fourteen days unless some complication such as epididymitis occurs. This is the most common complication of any type of prostatectomy and probably tying off the vasa should be routine. The perineal operation lends itself much more readily to hemorrhage control and to primary closure and healing than does the suprapubic for obvious reasons. Certainly if results such as these can be obtained with the perineal, then the suprapubic operation ought to be abandoned unless it can come up to the same standard." A seventh

reply, brief and to the point, is in full as follows: Have you any preference between the perineal and suprapubic route? "I prefer the perineal." State briefly your reasons: "(a) Easier approach. (b) Prostate more accessible through perineum for clean enucleation; ligation of bleeders; removal of tags, etc. (c) Smoother postoperative convalescence. My suprapubic patients are more apt to be disturbed by abdominal distention and are generally sicker than those operated upon perineally. (d) Lower mortality rate. (e) In my hands quicker closure of perineal fistula than of suprapubic. I find that both methods give about the same functional results, so that because of the advantages in my experience noted above, I use the perineal method, unless other factors enter to modify the choice."

Have you had rectal fistulae? "There have been no rectal injuries or fistulae." Have you had incontinence? "There have been no cases of true incontinence. In several there has been a slight terminal dribbling, which in no instance has persisted longer than six months."

Will you briefly state in general your experience with prostatectomy? "A total of fifty-six perineals with two deaths and twenty suprapublics with two deaths. Until recently have used caudal anesthesia for the perineal and combined caudal and abdominal infiltration for the suprapubic. Have been converted to spinal for all prostatectomies, unless there are definite contraindications."

#### CONCLUSION

The above brief outline of the experience and opinions of a few of the second generation would indicate that most of them are perineal enthusiasts in spite of early discouragement. The conclusion to be drawn, therefore, is that perineal prostatectomy can be taught. But the 29 per cent suprapubic and 11 per cent perineal mortalities point clearly to the need of supervision and improvement of the city and county urological service in providing the final stage of this instruction.

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#### DISCUSSION

RALPH WILLIAMS, M. D. (650 South Grand Avenue, Los Angeles).—It seems to me that we have gotten away from the subject. There are some surgeons who have changed from the suprapubic to the perineal prostatectomy. A good many of them have had a certain amount of training in the perineal operation. They took up the suprapubic operation because they thought it was easier; but when they tried the perineal operation they found they had to train themselves in the technique. Now, that is the whole problem in perineal prostatectomy; when it is performed by a surgeon who has learned the technique it is technically worth witnessing, but no one, even those who can do it all right, can teach another. Each man has to learn it himself. Being more or less of the old school, I do the suprapubic operation mostly. Operators of equal skill have practically the same results in either operation. Fistulas are not so likely in the suprapubic operation. A mortality of 10 or 15 per cent follows either operation when done by the general surgeon, but a much lower per cent of mortality follows work by the trained urologist.

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R. L. RIGDON, M. D. (909 Hyde Street, San Francisco).—The paper by Doctor Hinman on "The Teaching of Perineal Prostatectomy," includes an argument for the superiority of the perineal route. So far as the matter of choice of route is concerned, the advocates of each method seem to be thoroughly convinced that the one or the other is unquestionably superior and arguments pro or con are scarcely worth while; when a man's mind is definitely made up there is little to be gained in trying to change it. The oncoming medical student must of necessity accept, for

the most part, the opinion of his teacher. This is well, for each operation has its place and each should be kept.

The teaching of either suprapubic or perineal prostatectomy is not easy. After a surgeon has thoroughly mastered the technique, it then seems to him so simple that he has difficulty in realizing the perplexities of the student. I am convinced, too, that a student by study and observation may master the various steps in the operation and be able to discuss and answer questions intelligently and still be very far from really knowing the operation. It is only by doing the operation repeatedly that he acquires skill. It is also certain, under our present methods of teaching, no recent graduate can be a finished operator; his real skill will come after he has gone into practice for himself and has assumed full responsibility, both as to manual manipulation and judgment.

I do not believe a true test of teaching ability is afforded by the number of students who continue in the method they have been taught. What should happen, and actually does, is that wider reading, more extended observation and a growing experience enables the surgeon to choose the method that gives best results in his hands. When he has made this independent choice he is for the first time fully taught. It is manifest a professor cannot supply all this instruction.

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ROBERT V. DAY, M. D. (1930 Wilshire Boulevard, Los Angeles).—It seems to me that we should get back to what Doctor Young has always said, namely, that each should do the type of prostatectomy he personally can do best; in other words, the type of operation for which he has been trained and with which he has had the most experience. This is a bit off of the announced subject, but Doctor Hinman has himself brought up this phase of the matter. Doctor Hinman has just stated, and seemingly most perineal prostatectomists believe that only the perineal method is highly technical. As to the manner of approach, this is true, but as regards all other steps in the suprapubic operation I am sure that such is not the case and no doubt this accounts for the high mortality and poor results when perineal prostatectomists and others without a background of experience and training in suprapubic prostatectomies attempt the suprapubic operation. Indeed every other factor except the approach is highly technical and requires great judgment if the suprapubic operation is chosen.

As regards early healing, I personally dislike to have the bladder wound heal under two weeks' time. There are a pair of kidneys above that have already been damaged during the years of developing prostatism, or at least there is potential damage. Therefore, too early closure of the bladder and consequently the danger of increased intravesical tension and tears of the healing bladder neck and prostatic bed during the urinary act are factors to be considered.

If a patient is considered a good risk from the standpoint of prostatectomy the mortality will be about equal, no matter which type of operation is done. On the other hand, among the poor risks comprising 20 to 30 per cent of cases coming to operation are bad risks, and in this type of case there is no question but that the perineal operation is safer from the standpoint of immediate mortality. Randall used to say that an hypertrophied prostate which was largely intra-urethral should be removed perineally, and a prostate pushing into the bladder should be removed suprapublically. As a matter of fact any prostate may very well be removed perineally by a perineal prostatectomist and, on the other hand, any prostate may satisfactorily be dealt with suprapublically by a finished suprapubic prostatectomist.

Finally, after a practitioner has received the training Doctor Hinman speaks of under the supervision of a master of this operation, he has only just begun; it takes one hundred or more perineal operations before he adequately masters the technique.